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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,008	01/26/2004	Nenad Nestorovic	MVIS 97-05 C4	1293

7590 08/05/2005

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EXAMINER	
GABOR, OTILIA	
ART UNIT	**PAPER NUMBER**
2878	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,008	NESTOROVIC ET AL.	
	Examiner	Art Unit	
	Otilia Gabor	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *101-162* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *101-162* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

1. The amendment filed 05/31/2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 101, 103, 112, 113, 119, 121-125, 128, 134, 136, 140, 151-162 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnow et al. (U. S. Patent 3,652,956) and further in view of Melville (U. S. Patent 5,557,444) and Neukermans (U.S. Patent 5, 629,790 and 5,648618).

Pinnow discloses (Fig.2) a display device that produces visible image (static) in

response to an input image signal, the device comprising:

- a screen (10) including a base plate and a wavelength converting coating (11) responsive to output light of a first wavelength (red) in the visible range in response to light of a second wavelength (16, 17; blue and green), the panel containing phosphor and thus a photoluminescent material;
- a light source (12, 14, 15) operative to emit modulated light of a second wavelength in response to the image signal;
- a scanner assembly (18) having an input aligned optically to receive light from the light source and an output aligned optically to direct the light received at the input to the screen, the scanner assembly being responsive to a driving signal to scan the received light directly onto the wavelength converting coating (11) in a periodic pattern.

In operation, the method of providing a visible image to a user comprises the following steps: modulating light of a first wavelength (16, 17) with image information; scanning (18) the light of a first wavelength in a periodic pattern directly onto a wavelength converting coating; and converting with the wavelength converting coating (11) the scanned light of the first wavelength into a light of a second wavelength (red). Pinnow fails to specifically disclose the claimed resonant scanning or the bi-directional scanning method as claimed, however it would have been obvious to one of ordinary skill in the art to use the resonant scanning method of Melville or the bi-directional scanning method of Neukermans, since Pinnow does not limit the scanning type, and since the claimed scanning mechanisms and methods are well known and widely

utilized (see also specification on pages 9 and 16) for their obvious advantage (finer scanning precision).

Regarding claims 112, 113 Pinnow discloses that the wavelength converting material includes phosphor and an organic compound (see claim 3).

Regarding claim 119 Pinnow discloses that the panel is viewable by a viewer (since the wavelength is in the visible a direct viewing is possible).

Regarding claim 121 the video display is one that has the photoluminescent panel in a front-projection configuration (the first wavelength impinges upon the panel from the same side that the viewer faces).

Regarding claim 136 Pinnow discloses (Col.3, lines 20-24) that the scanner assembly includes a mirror mounted for pivotal movement about an axis of rotation.

Regarding claim 140 Pinnow discloses (Fig.2) that the wavelength converting coating is a visible wavelength sensitive phosphor and the second wavelength is a visible wavelength.

Regarding claim 152 Pinnow discloses emitting continuous wave light of the first wavelength with a light source and modulating the continuous light with an external amplitude modulator (14) separate from the light source.

Regarding claims 122, 128, 153 Pinnow discloses (Col.3, lines 29-32) raster scanning.

Regarding claim 154 Pinnow discloses redirecting light with a scanning mirror (18).

Regarding claims 101, 155, 156 Pinnow discloses converting light of the first wavelength into light of a second wavelength by applying light to the photo-luminescent material, a phosphor (11, 27).

5. Claims 101, 103, 123, 151, 155-162 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckman (U. S. Patent 4,891,829) and further in view of Melville (U. S. Patent 5,557,444) and Neukermans (U.S. Patent 5, 629,790 and 5,648618).

Deckman discloses (Figs.1-3) a method of providing a visible image to a user, comprising the steps of: modulating light of a first wavelength (X-ray; n quanta) with image information (X-ray target object); scanning the light of the first wavelength in a periodic pattern (Fig.3); and converting (energy converter) the scanned light of the first wavelength into light of a second wavelength (visible; nxm quanta). Since the gain element is optional, the scanning of the light of the first wavelength onto the wavelength converting coating is direct. In operation, the X-ray is modulated with information of the target object as the X-ray source is scanned around the object and is converted into visible radiation with energy converter. The conversion of the light from the first into the second wavelength includes applying the scanned light onto a photoluminescent material, such as a phosphor (Col.3, lines 65-68).

Deckman fails to specifically disclose the claimed resonant scanning or the bi-directional scanning method as claimed, however it would have been obvious to one of ordinary skill in the art to use the resonant scanning method of Melville or the bi-directional scanning method of Neukermans, since Deckman does not limit the

scanning type, and since the claimed scanning mechanisms and methods are well known and widely utilized (see also specification on pages 9 and 16) for their obvious advantage (finer scanning precision).

6. Claim 101, 103, 106, 107, 112, 119, 120, 122-125, 128-131, 134, 136, 151-162 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michael et al. (GB 2186147 A) and further in view of Melville (U. S. Patent 5,557,444) and Neukermans (U.S. Patent 5, 629,790 and 5,648618).

Michael discloses a video display device that produces a visible image in response to an input image signal, and method of providing a visible image to a user, the system comprising:

- a screen including a base plate (6) and a wavelength converting coating (5) responsive to output light of a first wavelength in the visible range in response to light of a second wavelength (UV light);
- a light source (1) operative to emit modulated light of a second wavelength (in UV range) in response to the image signal (see Figg.1, Col.1, lines 65-71);
- a scanner assembly (3, 4) having an input aligned optically to receive light from the light source (1) and an output aligned optically to direct the light received at the input to the screen (5, 6), the scanner assembly being responsive to a driving signal to scan the received light directly onto the wavelength converting coating (5) in a periodic pattern (see Fig.1, Col.1, lines 52-103, claim 1). The wavelength-converting panel is of a phosphor material and thus photoluminescent.

In operation, the method of producing a video image comprises the steps of: receiving an image signal (see claim 1); modulating the output of a light source responsive to the image signal (see claim 1); scanning the modulated first wavelength beam (UV light) from the light source (1) across the photoluminescent panel (5, 6); and converting the first wavelength (UV) to a second wavelength (visible). See Fig.1, claims 1-6.

Michael fails to specifically disclose the claimed resonant scanning or the bi-directional scanning method as claimed, however it would have been obvious to one of ordinary skill in the art to use the resonant scanning method of Melville or the bi-directional scanning method of Neukermans, since Michael does not limit the scanning type, and since the claimed scanning mechanisms and methods are well known and widely utilized (see also specification on pages 9 and 16) for their obvious advantage (finer scanning precision).

Regarding claims 106, 107, 131 Michael discloses that the light source is a laser emitting ultraviolet light (see Col.1, lines 59-64).

Regarding claim 112 Michael discloses that the wavelength converting material includes phosphor (see Fig.1).

Regarding claim 119 Michael discloses that the panel is directly observable by the viewer (see Col.1, lines 89-104).

Regarding claim 120 Michael discloses that the scanned beam at the first wavelength impinges upon the panel surface opposite that of the viewer (see Col.1,

lines 92-103; the panel support is transparent to visible light and thus the viewer sees the image from a side opposite to that which is scanned).

Regarding claims 122, 128, 153 Michael discloses that the scanning is done in a raster pattern (see claim 5).

Regarding claims 124, 125 Michael discloses that the scanned modulated first wavelength beam forms a pattern on the photoluminescent panel corresponding to the image signal and the emitted second wavelength light corresponds to the pattern of the scanned modulated first wavelength beam (see Col.1, lines 89-104).

Regarding claims 129, 130 Michael discloses that the first wavelength is in the UV region of the spectrum and the second wavelength is in the visible region of the spectrum and thus it includes the wavelength between 405 and 410 nm.

Regarding claim 136 Michael discloses that the scanner assembly includes a mirror mounted for pivotal movement about an axis of rotation (see Fig.1).

Regarding claim 152 Michael discloses that the modulating is done by continuously modulating the light from the light source with a modulator (2) separate from the light source (see Fig.1).

Regarding claim 154 Michael discloses that the light is redirected with a scanning mirror (4).

Regarding claims 155, 156 Michael discloses converting the scanned light of the first wavelength into a second wavelength by applying the scanned light to a photoluminescent material such as a phosphor (5).

7. Claims 101, 102, 106, 107, 112, 114-117, 119, 121-125, 129-131, 134, 136, 142, 143, 151, 154-162 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wells et al. (WO 90/12387) and further in view of Melville (U. S. Patent 5,557,444) and Neukermans (U.S. Patent 5, 629,790 and 5,648618).

Wells discloses a video display apparatus and method of providing a visible image to a viewer, the display comprising: a screen (18) including a base plate and a wavelength converting coating responsive to output light of a first wavelength in a visible range in response to light of a second wavelength (UV range); a light source (11) operative to emit a modulated light of a second wavelength (UV light) in response to the image signal; and a scanner assembly (14-17) having an input aligned optically to receive light from the light source and an output optically aligned to direct the light received at the input screen (18) so that the scanner assembly scans the received light directly onto the wavelength converting coating (phosphor) in a periodic pattern (see Fig.1). In operation, after the laser light of the first wavelength is modulated (see page 2, lines 21-22), it is sent to the scanner assembly which scans the laser light in a periodic pattern directly onto a wavelength converting coating (photoluminescent phosphor), which converts the incident UV light into a visible light having a second wavelength.

Wells fails to specifically disclose the claimed resonant scanning or the bi-directional scanning method as claimed, however it would have been obvious to one of ordinary skill in the art to use the resonant scanning method of Melville or the bi-directional scanning method of Neukermans, since Wells does not limit the scanning type, and since the claimed scanning mechanisms and methods are well known and

widely utilized (see also specification on pages 9 and 16) for their obvious advantage (finer scanning precision).

Regarding claim 102 Wells discloses control electronics (19, 20) operable to provide an image signal (22) to the first light source (11) which light source is responsive to this control electronics to modulate the beam emitted between at least two energy levels (the appropriate line intensity modulation signal is fed to the light source to control the power of the beam according to the different fluorescent light responses which could be red, green or blue).

Regarding claims 106, 107, 131 Wells discloses that the laser is operable to emit UV light.

Regarding claim 112 Wells discloses that the wavelength converter includes phosphor.

Regarding claims 114, 115, 116 Wells discloses that the photoluminescent panel includes a plurality of wavelength converting materials each of them responsive to convert incident light to a particular second wavelength (see abstract) where the plurality of materials is formed in a series of interstitially located lines (see abstract, Fig.1, and page 5), and that the particular emission wavelength includes wavelengths corresponding to red, green and blue (see pages 4, 5).

Regarding claim 117 Wells discloses the presence of a radio-frequency receiver coupled to the light source (see page 2).

Regarding claim 119 Wells discloses that the image is viewable by a viewer (visible light is emitted from the panel, thus image is directly observable by a viewer).

Regarding claim 121 Wells discloses the scanned beam directly scanning the phosphor coating and does not indicate that the support is transparent to visible light and therefore the viewer has to view the screen from the same side as the scanning assembly. Thus it is a front-projection configuration.

Regarding claims 122, 128, 153 Wells discloses that the scanning is done in a raster pattern (see Fig.1)

Regarding claims 124, 125, 154 Wells discloses that the scanned first wavelength beam forms a pattern on the photoluminescent panel corresponding to the image signal where the second wavelength light emitted by the panel corresponds to the pattern of the scanned light, where the scanning of the light includes redirecting the light with a scanning mirror (see Fig.1, page 5).

Regarding claims 129, 130 Wells discloses that the first wavelength is in the UV range and the second wavelength is in the visible range, and thus it includes the range of 405 to 410 nm.

Regarding claim 136 Wells discloses that the scanner assembly includes a mirror mounted for pivotal movement about an axis of rotation (see Fig.1).

Regarding claims 142, 143 Wells discloses that the light source is directly modulated.

Regarding claims 155, 156 Wells discloses converting the light of the first wavelength (UV) into light of a second wavelength (visible) by a photoluminescent panel (18), where the photoluminescent material includes phosphor (see abstract).

8. Claims 101, 123-125, 128, 133-136, 139-142, 151, 152, 154-162 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jehle (U. S. Patent 3,971,931) and further in view of Melville (U. S. Patent 5,557,444) and Neukermans (U.S. Patent 5, 629,790 and 5,648618).

Jehle discloses a display device that produces a visible image in response to an input image signal, comprising: a screen, including a base plate and a wavelength converting coating (22) responsive to output light of a first wavelength in a visible range (44) in response to light of a second wavelength; a light source (LED 10) operative to emit modulated light of the second wavelength in response to the image signal (video); and a scanner assembly (14, 16) having an input aligned optically to receive light from the light source and an output aligned optically to direct the light received at the input to the screen, the scanner assembly being responsive to a driving signal to scan the received light onto the wavelength converting coating in a periodic pattern. Jehle uses an image intensifier (48) positioned between the scanner assembly and the screen and therefore it does not directly scan the incident light onto the converting phosphor coating, however since he discloses in Col.1, lines 25-58, that his invention overcomes the prior art conventional systems where there is no image intensifier utilized, it is obvious to one having ordinary skill in the art that having an image intensifier in the system is optional and therefore if clarity and resolution is not of the most importance, one can use the conventional systems where there is no image intensifier and where the scanning assembly scans the incident light directly onto the phosphor screen.

Jehle fails to specifically disclose the claimed resonant scanning or the bi-directional scanning method as claimed, however it would have been obvious to one of ordinary skill in the art to use the resonant scanning method of Melville or the bi-directional scanning method of Neukermans, since Jehle does not limit the scanning type, and since the claimed scanning mechanisms and methods are well known and widely utilized (see also specification on pages 9 and 16) for their obvious advantage (finer scanning precision).

Regarding claims 123, 151 Jehle discloses (see Fig.1) a method of providing a visible image to a user, comprising the steps of: modulating light of a first wavelength (infrared, see Col.2, lines 30-31) with image information (video); scanning the light of the first wavelength in a periodic pattern (with mirror 14); and converting the scanned light into light of a second wavelength (visible, see Col.2, line 39).

Regarding claims 153, 154 Jehle discloses the step of scanning the light of the first wavelength in a periodic pattern where the step includes directing the light through a substantially raster pattern or redirecting the light with a scanning mirror (see Col.2, lines 21-24).

Regarding claims 136 Jehle discloses the scanner assembly as containing a mirror that can rotate pivotally around an axis (inherently).

Regarding claims 139-141 Jehle discloses (Col.2, lines 29-33) that the wavelength converting coating includes a phosphor and that the second wavelength is in the range of infrared, visible or UV.

Regarding claim 152 Jehle discloses a video signal modulating the light source (it is inherent that emission and modulation is continuous otherwise choppy images result).

Regarding claim 154 Jehle discloses a scanning mirror (14).

Regarding claims 155-156 Jehle discloses using phosphor, which is a photoluminescent material.

9. Claims 104, 105, 126, 127, 137, 138 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnow or Deckman or Michael or Wells or Jehle and Melville (U. S. Patent 5,557,444) and Neukermans (U.S. Patent 5, 629,790 and 5,648618).

Pinnow, Deckman, Michael, Wells and Jehle fail to disclose a micro-electro-mechanical system with the claimed scanning refresh and frame rate as the scanning assembly, however it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the claimed scanning mechanism since these scanners are well known and widely utilized scanning assemblies for their obvious advantage (finer scanning precision), and since none of the references put a limitation as to the type of scanners that can be utilized in their system.

10. Claims 106-111, 131, 132, 133, 142-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnow, Melville and Neukermans, claims 106-111, 131-133, 142-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckman, Melville and Neukermans, claims 108-111, 132, 133, 142-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michael, Melville and Neukermans, claims 108-111, 132, 133, 144-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wells, Melville and Neukermans, and claims 106-111, 131, 132, 143-150 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Jehle, Melville and Neukermans.

None of the references cited above disclose the claimed light source types, however it would have been obvious to one having ordinary skill in the art to utilize any conventionally available light sources, since none put a limitation as to what type of light source that can be utilized in their system. The claimed light sources are conventionally used in the art as light sources and thus qualify as equivalents of the light sources used in the prior art cited.

11. Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinnow, Melville and Neukermans or Deckman, Melville and Neukermans, or Michael, Melville and Neukermans, or Wells, Melville and Neukermans, or Jehle, Melville and Neukermans.

None of the references cited discloses a computer for generating an image signal, however since the references disclose a video signal as the image signal it is obvious that it can be generated by a computer, and thus it would have been obvious to one having ordinary skill in the art to do just that since the Applicant has not shown that utilizing a computer solves any stated problem and is for any particular purpose.

Response to Arguments

12. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

13. **NOTE:** The Applicant stated that due to an error in the patent number of reference Pinnow, it could not discern what reference the Examiner was alluding to, even after plugging in all possible number combinations. The actual reference Pinnow is the same one as cited by the Applicant in the IDS filed on 01/26/2004, namely, Patent No. 3,652,956.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Otilia Gabor whose telephone number is 571-272-2435.

The examiner can normally be reached on Monday, Thursday-Friday between 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Otilia Gabor
Primary Examiner
Art Unit 2878

OTILIA GABOR
PRIMARY EXAMINER